FACT SHEET

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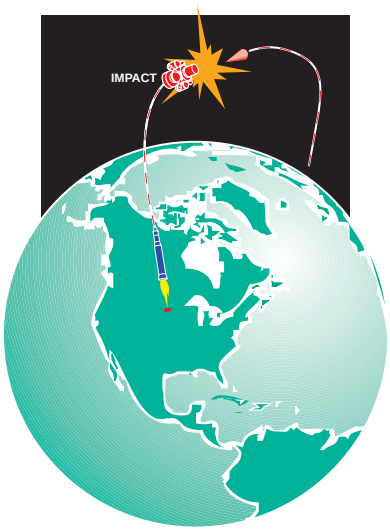
NATIONAL MISSILE DEFENSE WEAPON ELEMENT

INTRODUCTION

The weapon element forms the core of the National Missile Defense (NMD) system. Its mission is to engage high-speed ballistic missile warheads in the midcourse (exoatmospheric) phase of their trajectories and destroy them by force of impact. The weapon system consists of:

- An interceptor component consisting of a booster vehicle and a kill vehicle (KV) to conduct the engagement;
- The ground based command and launch equipment needed to fire the interceptor; and
- The support equipment needed to deploy and maintain the interceptor.

The Role of the Ground Based Interceptor



MISSION

PROVIDE NON-NUCLEAR HIT-TO-KILL INTERCEPT OF AN INCOMING REENTRY VEHICLE

DESCRIPTION

- **WEAPON ELEMENT FOR NMD**
- **HIT-TO-KILL NON-NUCLEAR EXO-ATMOSPHERIC INTERCEPTOR OF ICBM REENTRY VEHICLES**
- **DORMANT, FIXED-BASED INTERCEPTOR**

OPERATIONAL CONCEPT

The Ground Based Interceptor launches in accordance with a weapon tasking plan from the Battle Management, Command, Control and Communications (BMC3) element and flies toward the target's predicted location. Aided by one or more in-flight target updates (IFTUs) from the BMC3 element, the interceptor kill vehicle uses onboard sensors to acquire the threat cluster. It then uses its onboard discrimination capability, alone or fused with a threat object map (TOM) obtained from the BMC3 element, to determine which object is the designated target. The GBI KV then adjusts its trajectory to collide with the target. Both the kill vehicle and the target are demolished in the collision.

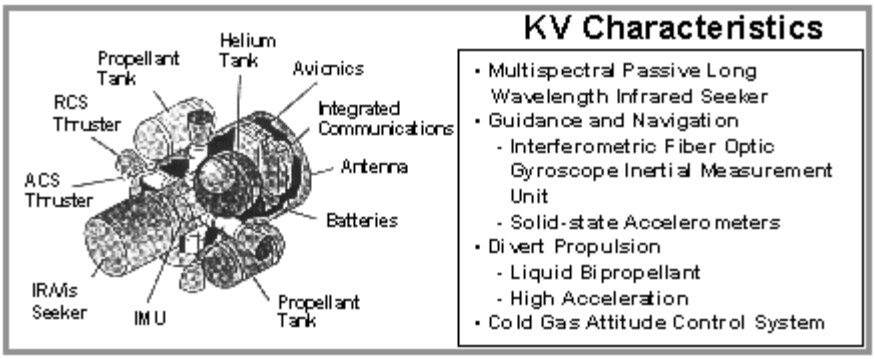
The Exoatmospheric Kill Vehicle (EKV)

The EKV is the intercept component of the GBI. The EKV has its own seeker, propulsion, communications, guidance, and computers to support intercept targeting decisions and maneuvers. The EKV must accomplish a variety of complicated tasks to achieve a hit-to-kill collision. It will use an onboard communications system to transmit messages to and receive messages fro m the earthbound BMC3 element. The EKV also uses a multiple-waveband seeker to acquire and track targets. This seeker is comprised of focal plane arrays and a cryogenic cooling assembly attached to an optical telescope, supported by processing hardware and software. The EKV may use a combination of onboard navigation and target selection capabilities, as well as uplinked transmissions, to zero in on a target and destroy it.

OPERATIONAL CONCEPT [CONTINUED]

Booster Development

In 1998, the Lead Systems Integrator, Boeing, began developing a dedicated weapon system booster using off-the-shelf motors. With slight modifications, the Graphite Epoxy Motor (GEM) will be used for the first stage, and the Orbus 1A will be used for the second and third stages. The kill vehicle contractor will supply an adapter to interface the kill vehicle with the booster. Upon assembly, the interceptor is housed in a canister designed to provide a controlled environment over the deployment life.



Performance of the GEM/Orbus/Orbus booster vehicle will be demonstrated in three booster verification (BV) flight tests. BV-1 and –2 will be conducted from Vandenberg Air Force Base, California, to demonstrate performance of the three stage booster. BV-3 will be conducted from Kwajalein Missile Range, in the central Pacific Ocean, to demonstrate the booster's interfaces with a simulated kill vehicle.

Payload Launch Vehicle (PLV)

Until the off-the-shelf booster is available, flight tests are conducted using the Lockheed Martin PLV. The PLV consists of the second and third stages of retired Minuteman II boosters, modified as necessary to function as first and second stages. PLV performance is adequate for testing, but is insufficient for single-site coverage of all 50 states.

Weapon Support System (WSS)

The WSS consists of the command, launch, readiness, training, and maintenance equipment used to support interceptor deployment and testing. The WSS acts as the interface between the BMC3 element and the interceptor before launch. It also supports the physical and environmental needs of the deployed interceptor.

The Ground Based Interceptor

FREQUENTLY ASKED QUESTIONS

How much does the PLV cost?

The Payload Launch Vehicle (PLV) is a component of the Ground-Based Interceptor (GBI) and ranges in cost between $12M - $18M

How much does the EKV cost?

The Exoatmospheric Kill Vehicle (EKV) is a component of the GBI and ranges in cost between $30M - $35M

How much does the Target Array cost?

The Target Array ranges in cost between $20M - $25M. The current configuration of the Target Array includes such things as the validated GBI Target (Minuteman II with the front section MSLS payload), PLV Booster, and support costs.

SUMMARY

The evolutionary development of the NMD Weapon System element provides a low risk methodical approach to best address hit-to-kill intercept technical and performance issues. The planned test and evaluation program provides for periodic demonstrations of increased defense capability as hardware, software, and supporting NMD elements become available. The EKV represents a concerted effort by the Ballistic Missile Defense Organization to develop a viable defense against a limited ballistic attack using existing technologies.

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